Effect of magnetic field strength ...

3% of Si on the basis of a distinctly crystallographic texture. Thermal and thermomagnetic treatment was conducted on a special device which granted uniform heating in holding and cooling of samples in the neutral medium, argon. Conditions for thermomagnetic treatment: heating at 900°C, holding time 30 minutes, cooling to 700°C within 1 hour, holding time 1 hr, cooling at a rate of 70 degrees hr^{-1} to 500°C, and cooling in switched-off furnace. The magnetic field with a frequency of 50 cps was switched at 700°C during the holding time, and switched off at 200°C. Magnetic field strengths in the individual treatments were 0.07, 0.5, 7.0, and 70 oersteds. Prior to measurements, the samples were demagnetized by an alternating field of 50 cps with an amplitude decreasing steadily to zero. Magnetization curve and hysteresis loop were measured by the ballistic method. The following was found: In fields up to 7 oersteds, hysteresis loop of tetragonal samples after the treatment described above becomes the narrower and the more rectangular, the higher the magnetic field strength was during treatment. Hysteresis loop practically remains unchanged when the field is altered during treatment from 7 to 70 oersteds. In digonal and trigonal samples, hysteresis loops after

Effect of magnetic field strength ...

treatment are considerably changed in the field of 70 oersteds, and the rectangular shape increases very much. Increase of magnetic induction ΔB caused by the treatment takes place in weak and medium fields. $\Delta B(H)$ curves show a maximum in the range of maximum permeability. This increase in induction grows in tetragonal samples with an increase of magnetic field strength during treatment from 0.07 to 7 oersteds. If the field increases from 7 to 70 oersteds, however, the effect of treatment is changed only slightly. Magnetic induction decreases in the range of fields from 1 - 1.5 oersteds after TMB (i. e., $\Delta B<0$). The magnetic characteristic most suspectible to the treatment is maximum permeability which increases considerably in all types of samples. The remanence of digonal and trigonal samples decreases considerably and that of tetragonal samples only slightly. Since permeability increases considerably by treatment of cold-rolled electrotechnical steel in weak and medium fields, this treatment can be successfully applied to electrotechnical parts for which the characteristics of operation are determined by the permeability of magnetic conductors in weak and medium fields. There are 6 figures, 1 table, and 11 references: 5 Soviet and 6 non-Soviet. The

Effect of magnetic field strength ...

four references to English-language publications read as follows: Fiedler, H., Pry, R., J. Appl. Phys., Suppl., 30, 109 (1959); Heidenreich, R., Nesbitt, E., Berbank, J. Appl. Phys., 30, no. 7, 955 (1959); Gertz M., J. Appl. Phys., 22, no. 7, 984 (1951); Bozorth R., J. Appl. Phys., 8, 575 (1937).

ACC NR: AR6029298 SOURCE CODE: UR/0271/66/000/006/B032/B032

AUTHOR: Ivanov, N. S.; Smagin, V. A.

TITLE: Reverse magnetization of a section of film in a ferromagnetic thin film memory device

SOURCE: Ref. zh. Avtomatika, telemekhanika i vychislitel'naya tekhnika, Abs. 6B250

REF SOURCE: Sb. Fiz.-tekhnol. vopr. kibernet. Seminar. Vyp. 1. Kiyev, 1965, 96-107

TOPIC TAGS: ferromagnetic film, magnetic thin film, electromagnetic memory

ABSTRACT: Formulas are presented for calculating the optimum size of an address field thus assuring reverse magnetization of a section of thin film located below a conductor. It is indicated that when the address field is increased above the optimum value the necessary values of the discharge field and current must be increased linearly. It is assumed that an analysis with analogous conclusions can be made also for films deposited in the form of spots. The results of an experimental investigation of the address and discharge fields for permalloy and other films are given which agree well with the theoretical conclusions. [Translation of abstract] 5 illustrations, 1 table, and bibliography of 4 titles. V. S.

SUB CODE: 09

Card 1/1 UDC: 681.142.652.6

SMAGIN, V. G. PA 12/49T95

USSR/Medicine - Phlebitis, Splenic, Therapy Jul 48
Medicine - Phlebitis, Hepatic, Therapy

"Penicillin Therapy for Septic Phlebitis in the Spleen and Liver Due to War Wounds," V. G. Smagin, Hosp Therapeutic Clinic, Nav Med Acad, 5 pp

"Klinicheskaya Meditsina" Vol XXVI, No 7

Discusses views of Strazheskiy and Leporskiy on this subject. Describes two of own cases in detail.

[redacted] 12/49T95

SMAGIN, V. G.

PA 59/49T48

USSR/Medicine - Liver May/Jun 49
Medicine - Function Tests

"The Thymol-Venoral Test for Determining the Function of the Liver," V. G. Smagin, Hosp Therapeutics Clinic, Mav Med Acad, 6 ½ pp

"Terap Arkhiv" Vol XXI, No 3

Differential diagnosis of parenchymatous and obetructive jaundice, diagnosis of hepatitis without jaundice and the initial symptom to hepatic insufficiency, and clarification of any disturbance in the function of the liver all play a significant role in this functional test. Test makes it possible to determine

59/49T48

USSR/Medicine - Liver (Contd) May/Jun 49

changes in albuminous exchange in diseases of the liver. Technical simplicity makes this thymol turbidity test very practical. Specificity and sensitivity of test make it one of the best. Includes table and graphs.

59/49T48

SMAGIN, V.G., dotsent

Lingering forms of Botkin's disease and of liver cirrhosis. Terap. arkh. 27 no.2:70-78 '55. (MLRA 8:7)

1. Iz propedevticheskoy terapevticheskoy kliniki (zav.-prof. S.M. Ryss) Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo instituta.

(HEPATITIS, INFECTIOUS, chronic)
(LIVER CIRRHOSIS, chronic)

SMAGIN, V.G.

Cholangitis and its role in the clinical course of Botkin's disease and liver cirrhosis. Trudy LSGMI 28:97-109 '56. (MLRA 10:5)

(CHOLANGITIS, etiology and pathogenesis,
hepatitis, infect., & liver cirrhosis (Rus))
(HEPATITIS, INFECTIOUS, complications,
cholangitis (Rus))
(LIVER CIRRHOSIS, complications,
same)

Experimental clinical use of the Soviet vitamin-tea tannin preparation. V. G. Smagin, D. I. Sinepol, and V. V. Chechilova (Leningrad Sanit.-Hyg. Med. Inst.). *Klin. Med.* 34, No. 6, 52-7(1956).—Combined use of tea tannin and ascorbic acid reduces considerably the permeability of the capillaries. The action of tea tannin is only effective during its administration. Upon discontinuation the permeability rises rapidly. The most beneficial effect of tea tannin is noticed in capillary toxicosis with its increased permeability and fragility.

A. S. Mirkin

RYSS, S.M., prof.; SMAGIN, V.G. (Leningrad)

Treatment of dirrhosis of the liver. Terap.arkh. 30 no.2:37-46 F '58.
(MIRA 11:4)
(LIVER CIRRHOSIS, therapy,
(Rus)

RYSS, S.M., prof.; SHAGIN, V.G., dots. (Leningrad)

Chronic cholangitis, clinical picture and therapy. Klin.med. 36 no.3:20-27 Mr '58. (MIRA 11:4)

1. Iz kliniki propedevtiki vnutrennikh bolezney (zav. - prof. S.M.Ryss) Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo instituta.

(CHOLANGITIS
clin.manifest. & ther. (Rus))

AFANAS'YEVA, Ye.K.; SMAGIN, V.G.

Clinical use of the vitamin P preparations citrin and a catechin complex. Vit. res. i ikh isp. no.4:272-280 '59. (MIRA 14:12)

1. Leningradskiy sanitarno-gigiyenicheskiy meditsinskiy institut Ministerstva zdravookhraneniya RSFSR.
(ASCORBIC ACID) (VITAMINS—P)

SMAGIN, V.G., dotsent

Clinical characteristics of liver cirrhoses developing as a consequence of epidemic hepatitis. Trudy LSGMI no.69:102-116 '61. (MIRA 15:11)

1. Kafedra propedevtiki vnutrennikh zabolevaniy Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo instituta (zav. kafedroy chlen-korrespondent AMN SSSR prof. S.M.Ryss).

(LIVER--CIRRHOSIS) (HEPATITIS, INFECTIOUS)

SMAGIN, V.G.; dotsent

Classification of liver cirrhoses. Trudy LSGMI no.69:117-129 '61.
(MIRA 15:11)

1. Kafedra propedevtiki vnutrennikh zabolevaniy Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo instituta (zav. kafedroy - chlen-korrespondent AMN SSSR prof. S.M.Ryss).
(LIVER—CIRRHOSIS)

ACC NR: AP7002416 SOURCE CODE: UR/0051/66/021/006/0693/0696

AUTHOR: Plachenov, B. T.; Avdonin, V. P.; Mikhal'chenko, G. A.; Smagin, V. M.

ORG: none

TITLE: Radioluminescence flash in silver activated soldium-chloride crystals

SOURCE: Optika i spektroskopiya, v. 21, no. 6, 1966, 693-696

TOPIC TAGS: radioluminescence, sodium chloride, crystal, silver activated sodium chloride, radioluminescence flash, activator, silver activator

ABSTRACT: A study was made of the thermal conditions accompanying the appearance of a flash of radioluminescence in NaCl(Ag) crystals containing different amounts of activator. A correlation of the results obtained with thermal luminescence and the spectral characteristics of radioluminescence of these crystals confirms the existence in them of electron and hole recombination luminescence. Orig. art. has: 3 figures. [Translation of authors' abstract] [SP]

SUB CODE: 20/SUBM DATE: 15Jul65/ORIG REF: 004/
UDC: 535.37:539.12.04:548.0

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ACC NR: AP7004956

greatly to enhance the radioluminescence by this procedure, sometimes by a factor of 100. The enhanced luminescence could also be stimulated by radiation in the F band. The luminescence was largely concentrated in two bands located at 370 and 430 mμ. The decay of the 370 mμ afterglow was such as to indicate that this luminescence band is due to a "bimolecular" process. The two luminescence bands behaved differently, and possible mechanisms that might account for them are discussed. It is concluded that the 430 mμ luminescence is due to hole recombination, and the 370 mμ luminescence, to electron recombination. The afterglow capability of the phosphorus-activated luminophors is ascribed to accumulation of holes at luminescence centers of two types. A certain increase in the luminescence intensity in the 430 mμ band during afterglow is ascribed to transfer of excitation energy from centers of one type to those of the other type. Orig. art. has: 1 formula and 2 figures.

SUB CODE: 20 SUBM DATE: none ORIG. REF: 003

Card 2/2

IL'INSKAYA, S.A.; SHAGIN, V.N.

V.N.Sukachev's research in Siberia; on his 80th birthday. Izv. Sib.otd.AN SSSR no.6:128-131 '60. (MIRA 13:9)
(Siberia--Botany) (Sukachev, Vladimir Nikolaevich, 1880-)

SMAGIN, V.N., kand. biol. nauk, otv. red.; RAZUMOVSKIY, S.M., red. izd-va; UL'YANOVA, O.G., tekhn. red.; ASTAF'YEVA, G.A., tekhn. red.

[Forest types in Siberia] Tipy lesov Sibiri. Moskva, Izd-vo AN SSSR, 1963. 221 p. (MIRA 17:1)

1. Akademiya nauk SSSR. Institut lesa i drevesiny.

SMAGIN, V.N.

Nikolai Ivanovich P'iavchenko; on his 60th birthday and 40th anniversary of his scientific and pedagogical, industrial and civic activities. Bot. zhur. 48 no.10:1546-1549 O '63. (MIRA 17:1)

1. Institut lesa i drevesiny Sibirskogo otdeleniya AN SSSR, Krasnoyarsk.

SMAGIN, Valentin Nikolayevich; P'YAVCHENKO, N.I., otv. red.

[Forest of the Ussuri basin] Lesa basseina r. Ussuri. Moskva, Nauka, 1965. 269 p. (MIRA 18:7)

ACCESSION NR: AP4041458 S/0138/64/000/006/0014/0016

AUTHOR: Smagin, Ye. N.; Zuyeva, M. V.; Makhlis, F. A.; Kuz'minskiy, A. S.

TITLE: Some aspects of the technological system for making technical rubber products by the method of radiation vulcanization

SOURCE: Kauchuk i rezina, no. 6, 1964, 14-16

TOPIC TAGS: resin, rubber product, rubber, synthetic rubber, vulcanization, radiation vulcanization, dimethylsiloxane, fluororubber, butadiene-nitrile, cobalt 60, Gamma radiation

ABSTRACT: One of the promising variants of the technological system for making technical rubber products by radiation vulcanization is to use a flat irradiator containing Co^{60} as aj-ray emitter. This technique is discussed in general terms and some preliminary data are presented. Data on the capacity of the irradiator for molds of various materials (iron, aluminum) and dimensions are tabulated. The advantages of the new device, having lighter weight and smaller dimensions compared to those used previously, are discussed. Radiation vulcanates based on rubbers for special purposes (dimethylsiloxane, fluoro-rubbers, butadiene-nitrile, etc.) have a higher thermal stability than the chemical vulcan-ates, but a lower strength. Since no vulcanizing agents or catalysts and no other ingredients

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ACCESSION NR: AP4041458

are added for radiation vulcanization, the consumption of raw material is reduced and the preparation of the mixtures is simplified. Molding is carried out at 100-200C (depending on the type of rubber) for 5-10 min., with subsequent cooling under pressure to remove the expansion stresses. The calculation of the irradiation dose in the mold is discussed, and it is concluded that special molds must be developed for radiation vulcanization to increase the capacity of the irradiator. Orig. art. has: 1 figure and 2 tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promy*shlennosti (Scientific Research Institute of the Rubber Industry).

SUBMITTED: 00 [illegible] ENCL: 00

SUB CODE: MT NO REF SOV: 008 OTHER: 001

Card 2/2

87944

S/094/61/000/001/004/007
E073/E335

26.2194

AUTHORS: Kamyrin, V.I., Kolodochko, S.A., Revzin, B.S. and Smagin, Yu.A.

TITLE: Reducing the Hydraulic Losses in Regulating Valves of High-pressure Turbines

PERIODICAL: Promyshlennaya energetika, 1961, No. 1, pp. 15 - 16

TEXT: In a number of turbines produced by the Leningradsiy metallicheskiy zavod (Leningrad Metallurgical Works) and operating at high parameters, increased losses in steam pressure occurred in the control valves of the live steam, amounting to 12-15 kg/cm^2 instead of the 3-3.5 kg/cm^2 estimated in calculations. These losses are particularly great in the top control valves (I and III) of the turbines of types BK-100-2 (VK-100-2), BK-50-1 (VK-50-1), BT-25-4 (VT-25-4), etc. The authors found that the basic cause of this is the formation of a general circular vortex - a circulatory motion of the steam about the valve axis.

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879 44

S/094/61/000/001/004/007
E073/E335

Reducing the Hydraulic Losses in Regulating Valves of High-pressure Turbines

To eliminate this phenomenon the authors proposed welding a divider (Fig. 1) into the valve housing, as shown in Fig. 2, and fitting a protective grid at the side of the steam inflow into the housing, so as to reduce the dynamic effect of the steam inflow into the diffuser seat. As a result of introducing this measure a fuel economy of 600-900 tons per turbine per annum was achieved.
This suggestion was awarded third prize in the Fifteenth All-Union Competition on Energy Saving.
Note: this is a complete translation.

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87944

S/094/61/000/001/004/007
E073/E335

Reducing the Hydraulic Losses in Regulating Valves of High-pressure Turbines

Fig. 1:

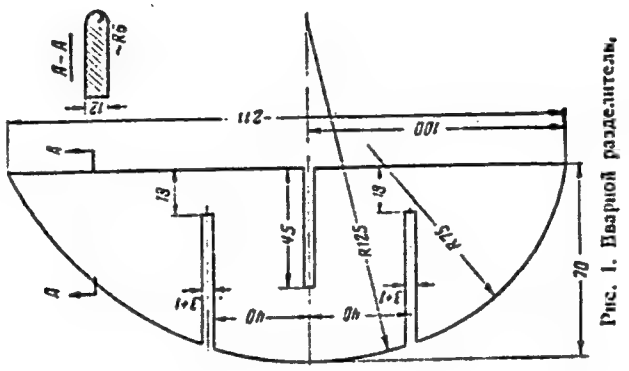

Рис. 1. Вварной разделитель.

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S/094/61/000/001/004/007
E073/E335

Reducing the Hydraulic Losses in Regulating Valves of High-pressure Turbines

Fig. 2:

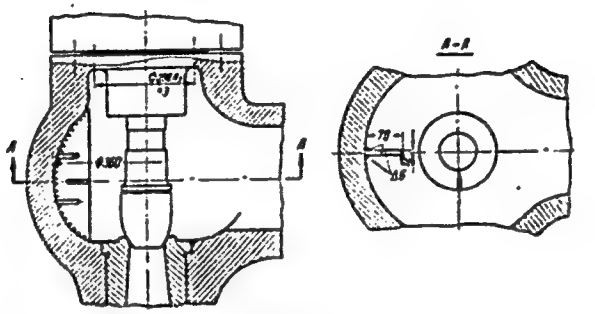

Рис. 2. Установка вварного разделителя в паровой коробке клапана.

There are 2 figures.
Card 4/4

69450

S/139/60/000/01/024/041
E201/E491

Measurement of the Dielectric Properties of a Polar Liquid as a Function of Temperature Using the Method of a Cylindrical Inhomogeneity in a Waveguide

+ 20	$\varepsilon' = 8.32$ (8.35) $\varepsilon'' = 7.15$ (7.20)	$\varepsilon' = 4.49$(4.38) $\varepsilon'' = 2.28$(2.19)
- 60	$\varepsilon' = 6.42$ $\varepsilon'' = 2.84$	$\varepsilon' = 4.25$ $\varepsilon'' = 1.19$

The values in brackets are those reported by Naokazu Koizumi (Ref 8) for a wavelength of 3.08 cm. The table shows that the real and imaginary parts of the complex permittivity of both alcohols decrease monotonically with temperature in agreement with theoretical predictions. Behaviour of polar liquids in high-frequency fields does not contradict dipole relaxation relationships established earlier for alcohols. There are 1 figure, 1 table and 8 references, 2 of which are Soviet, 1 English and 5 French.

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69-50

S/139/60/000/01/024/041
E201/E491

Measurement of the Dielectric Properties of a Polar Liquid as a Function of Temperature Using the Method of a Cylindrical Inhomogeneity in a Waveguide

ASSOCIATION: Kuybyshevskiy industrial'nyy institut imeni V.V.Kuybysheva (Kuybyshev Industrial Institute imeni V.V.Kuybyshev)

SUBMITTED: February 16, 1959

Card 3/3

SMAGINA, I.G., inzh.

Destruction of slime pipe coolers by thermal fatigue. Khim. Mash. shinostr. no.1838-39 Ja'63 (MIRA 17:7)

ACCESSION NR: AR4041616 S/0137/64/000/005/I066/I067

SOURCE: Ref. zh. Metallurgiya, Abs. 5I390

AUTHOR: Smagina, I. G.

TITLE: Influence of hydrogen on structure of steel

CITED SOURCE: Sb. Vliyaniye vodoroda na sluzhebn. svoystva stali. Irkutsk, 1963, 47-59

TOPIC TAGS: steel, steel structure, hydrogen corrosion, corrosion

TRANSLATION: Inclusions were revealed which are most vulnerable for H_2 in steel 20, used for production of pipes in oil-chemical industry. Ingots of special melts were contaminated with: 1) Fe sulfides, 2) Mn sulfides, 3) Fe oxides and 4) complex oxides of Fe and Cr (chromites). Metals were investigated metallographically in initial state and after prolonged influence of gaseous H_2 at 550° and 600° and with pressure of 600 atmospheres. Fe sulfides most intensely are destroyed with formation of friabilities, then Mn sulfides, Fe oxides are not changed. Samples with chromites were held in H_2 at 550° for 2,000 hours and at 600° for

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ACCESSION NR: AR4041616

700 hours. In 1st case change of chromites is not noticed; in the second around chromites a black edging was formed. Structure and properties of pipes of steel EI579 after influence of H_2(500 atmospheres) at a temperature of ~500 degrees were investigated. Chains of nonmetallic inclusions united among themselves by cracks are revealed; cracks coming out on internal surface of pipe in places of accumulation of nonmetallic inclusions are revealed. Appearance of such cracks is explained by influence of H_2 on structure of metal. Deterioration of inclusions located in the form of accumulations, during influence of H_2 can lead to formation of cracks by means of break of crosspieces between inclusions. With instability of structure (increased hardness) under influence of H_2 and temperature decomposition of solid solution with formation of globular inclusions along grain boundaries occurs, which weakens the latter. Hydrogen corrosion consists in decarbonizing, loosening of grain boundaries, creation of local internal stresses in places of accumulations of nonmetallic inclusions, deterioration of these inclusions and disintegration of the solid solution. Methods of combatting hydrogen corrosion are selection of grades of steel and method of their heat treatment, and purity of steel from nonmetallic inclusions, especially from their accumulations. Presence in steel of strong carbide-forming elements (V, Nb, Zn, Ti and others) decreases decarbonizing action of H_2. Ten illustrations. Bibliography: 13 references.

Card 2/3

ACCESSION NR: AR4041616

SUB CODE: MM ENCL: 00

Card 3/3

LIAKUMOVICH, A.G.; ZAKHAROVA, N.V.; SMAGINA, L.R.

Investigating the process of separation of isoamylenes from the fraction C_5 of gases of the thermal and catalytic petroleum cracking. Khim. i tekh. topl. i masel 6 no.11:14-18 N '61. (MIRA 14:12)
(Isoamylene) (Cracking process)

NESTERTSEV, V.N.; SMAGINA, N.G.

Vophatox in the control of tree pests. Zashch. rast. ot vred. i bol. 3 no.3:59-60 My-Je '58. (MIRA 11:6)

1. Nachal'nik Rostovskogo otryada (for Nestertsev). 2. Starshiy agronom Rostovskogo otryada (for Smagina).
(Trees--Diseases and pests)

SMAGINA, N.G.

Practices in aerial spraying against the shield bug Eurygaster integriceps. Zashch.rast.ot vred.i bol. 7 no.5:10 My '62. (MIRA 15:11)

1. Starshiy agronom Rostovskogo otryada po bor'be s vreditelyami i boleznyami rasteniy.
(Rostov Province--Eurygasters--Extermination)
(Aeronautics in agriculture)

N-8

Country : USSR
CATEGORY :

ABS. JOUR. : RZBiol., No. 19 1958, No. 87217

AUTHOR : [illegible] V.
INST. : Moscow Agricultural Academy imeni K. A.
TITLE : Winter Hardiness of Some Varieties of Apples and Pears

ORIG. PUB. : Sb. stud. nauchno-issled. rabot. Mosk. s.-kh. akad. im. K.A. Timiryazeva, 1958, No 8, 108-13

ABSTRACT : An evaluation of the winter hardiness of 55 varieties of apple trees and of 6 varieties of pear trees, under conditions of the severe winter of 1955/56, under conditions of Timiryazev Oblast'.

CARD: 1/1 Timiryazev.

BAR, I. [Bahr, I.], prof.; [illegible], G.A., [illegible] (deceased)

Stripping operation and transportation processes in open-pit mines of the German Democratic Republic. Gor. zhur. no.8:18-23 Ag '60. (MIRA 13:8)

1. Freybergskaya gornaya akademiya.
(Germany, East--Strip mining)

KNYAZEVA, L.A., kand.med.nauk; ARISTOVA, M.A.; KORSHUNOVA, N.A.;
[redacted]SENKO, A.V.; SMAGINA, V.A.; ORLOVA, A.I.

Experience in detecting hypertensives. Trudy MONIKI no.5:88-93 '62. (MIRA 16:4)

(HYPERTENSION)

20626

S/020/61/136/006/002/024
C 111/ C 333

16.4500
AUTHORS: Gakhov, F. D. and Smagina, V. I.

TITLE: Exceptional cases of a convolutional type of integral equation and first kind equations

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 136, no. 6, 1961, 1277-1280

TEXT: The authors consider the integral equations

$$\lambda\varphi(x) + \frac{1}{\sqrt{2\pi}}\int_0^\infty k_1(x-t)\varphi(t)\,dt + \frac{1}{\sqrt{2\pi}}\int_{-\infty}^0 k_2(x-t)\varphi(t)dt = f(x) \quad (A)$$

$-\infty < x < \infty$; $\lambda = \lambda_1$ for $x > 0$, $\lambda = \lambda_2$ for $x < 0$

and

$$\lambda_1\varphi(x) + \frac{1}{\sqrt{2\pi}}\int_{-\infty}^{\infty} k_1(x-t)\varphi(t)dt = f(x), \quad 0 < x < \infty$$

$$\lambda_2\varphi(x) + \frac{1}{\sqrt{2\pi}}\int_{-\infty}^{\infty} k_2(x-t)\varphi(t)dt = f(x), \quad -\infty < x < 0. \quad (B)$$

The theory of these integral equations leads to the investigation of the corresponding Riemann boundary value problem. The normal

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S/020/61/136/006/002/024
C 111/ C 333

Exceptional cases of a convolutional...

case exists if the coefficient $G(x)$ of the Riemann problem possesses no zeros or poles on the entire limit curve. At first the authors treat the exceptional case, where $G(x)$ possesses zeros and poles of integer order on the x-axis. It is stated that the number of linearly independent solutions of the problem in the exceptional case is smaller by the number of poles of $G(x)$ than the number of these solutions in the normal case. Then the authors show that the problem (A) leads to the Riemann problem

$$\Phi^+(x) = \frac{\lambda_2+K_2(x)}{\lambda_1+K_1(x)}\,\Phi^-(x) + \frac{F(x)}{\lambda_1+K_1(x)}, \quad -\infty < x < \infty \qquad (5)$$

and they assume that

$$\lambda_1 + K_1(x) = \prod_{j=1}^{m} (x-b_j)^{\gamma_j} \prod_{k=1}^{n} (x-c_k)^{\gamma_k} K_{11}(x)$$

$$\sum_{k=1}^{n} \gamma_k = 1; \qquad (7)$$

$$\lambda_2 + K_2(x) = \prod_{i=1}^{p} (x-a_i)^{\alpha_i} \prod_{k=1}^{n} (x-c_k)^{\gamma_k} K_{12}(x).$$

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C/111/ C 333

Exceptional cases of a convolutional...

The number of linearly independent solutions of (A) is then identical with the afore-mentioned number of solutions of the boundary value problem; however, the number of the solubility conditions is greater by 1; the constants occurring in the general solution cannot be used for satisfying the solubility conditions.

All the results for (A) hold also for the first kind equation

$$\frac{1}{\sqrt{2\pi}}\int_0^\infty k_1(x-t)\varphi(t)dt + \frac{1}{\sqrt{2\pi}}\int_{-\infty}^0 k_2(x-t)\varphi(t)dt = f(x), \quad -\infty < x < \infty \qquad (A_0)$$

which can be obtained from (A) for $\lambda \equiv 0$.

Problem B leads to the boundary value problem

$$G^+(x) = \frac{\lambda_2+K_2(x)}{\lambda_1+K_1(x)}G^-(x) + \frac{\lambda_2-\lambda_1+K_2(x)-K_1(x)}{\lambda_1+K_1(x)} \quad . \qquad (9)$$

The essential difference from problem (A) is that here the solubility conditions caused by the common zeros of $\lambda_1 + K_1(x)$ and $\lambda_2+K_2(x)$ can also be satisfied by the choice of the constants of the general

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solution (consequently not only by restrictions for $F(x)$ as in case (5), where $F(x)$ must have zeros in all points c_k).

From (B) and (9) one can obtain an equation of the first kind for $\lambda_1 = \lambda_2 = 0$ just like in case (A).

J. M. Rapoport and I. A. Chikin are mentioned in the paper.

There are 9 Soviet-bloc references.

ASSOCIATION: Rostovskiy - na - Donu gosudarstvennyy universitet (Rostov - na - Donu State University)

PRESENTED: October 3, 1960, by V. J. Smirnov, Academician

SUBMITTED: September 28, 1960

S/038/62/026/003/002/003
B125/B112

AUTHORS: Gakhov, F. D., Smagina, V. I.

TITLE: Exceptional cases of convolution-type integral equations and equations of the first kind

PERIODICAL: Akademiya nauk SSSR. Izvestiya, Seriya matematicheskaya, v. 26, no. 3, 1962, 361 - 390

TEXT: Integral convolution-type equations are singular equations having the normal form

$$a(t)\varphi(t) + \frac{b(t)}{\pi}\int_{-\infty}^{\infty}\frac{\varphi(\tau)}{\tau - t}\,d\tau = f(t)$$

according to Yu. I. Cherskiy (Uch. zapiski Kazanskogo gos. un-ta, v. 113 (1953), 43-55). The authors consider cases where the coefficient $G(x)$ of the corresponding Riemannian problem $\phi^+(x) = G(x)\phi^-(x) + g(x)$ disappears

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S/250/63/007/001/001/005
A001/A101

AUTHOR: Smagina, V. I.

TITLE: Exceptional cases of integral equations of convolution type and corresponding equations of the first kind in the class of exponential growth functions. Equation of class (A).

PERIODICAL: Doklady Akademii nauk BSSR, v. 7, no. 1, 1963, 12 - 16

TEXT: The author considers the integral equation of class (A):

$$\lambda\varphi(x) + \frac{1}{\sqrt{2\pi}} \int_0^{\infty} k_1 (x - t)\varphi(t)\, dt + \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{0} k_2 (x - t)\varphi(t)\, dt = f(x), \quad (A)$$

$$-\infty < x < \infty,$$

$$\lambda = \begin{cases} \lambda_1 & x > 0 \\ \lambda_2 & x < 0 \end{cases}$$

Card 1/4

Exceptional cases of integral equations of...

This equation can be solved on assumption that all the functions, constituents of the equation, are integrable with square on the real axis, and its solution is reduced to the solution of the Riemann boundary problem for a semi-plane. If this equation is solved in the class of exponential growth functions then, after Fourier transform, arise boundary problems with a complex contour consisting of a set of straight lines parallel to the abscissa axis. In the article by V. D. Gakhov and Yu. I. Cherskiy published in AS USSR, ser. mat, v. 20, no. 1, 1956, 33, certain additional restrictions are imposed on the kernel of the equation, which make it possible to reduce the solution to normal cases of the Riemann problem. In the present article the author renounces such restrictions and analyzes two simplest cases. Case I is characterized by the following conditions:

$k_1(x) \in \{a_1, b_1\}$; $k_2(x) \in \{a_2, b_2\}$ and $a_1 \leqslant b_1$; $a_2 \leqslant b_2$; $a_2 < b_1$. After the Fourier transform of Equation (A), the following Riemann problem on the complex contour ($\operatorname{Im} z = b_1$ and $\operatorname{Im} z = a_2$) is obtained:

$$[\lambda_1 + K_1(x + ib_1)]\Phi^+(x + ib_1) - F^+(x + ib_1) = \Omega(x + ib_1), \quad (1)$$

$$[\lambda_2 + K_2(x + ia_2)]\Phi^-(x + ia_2) - F^-(x + ia_2) = \Omega(x + ia_2).$$

Card 2/4

The solution of integral equation (A) is obtained from the formula:

$$P(x) = \frac{1}{\sqrt{2\pi}} \int_{ib_1-\infty}^{ib_1+\infty} \Phi^+(\zeta)\, e^{-ix\zeta}\, d\zeta - \frac{1}{\sqrt{2\pi}} \int_{ia_2-\infty}^{ia_2+\infty} \Phi^-(\zeta)\, e^{-ix\zeta}\, d\zeta \qquad (2)$$

The conditions of solubility are discussed and presented. Case II is characterized by the following conditions:

$k_1(x) \in (a_1, b_1)$; $k_2(x) \in (a_2, b_2)$; $a_1 < b_1 < a_2 < b_2$; $P(x) \in (b_1, a_2)$;

$f(x) \in (a_2, b_1)$.

The Fourier transformation of Equation (A) yields the following boundary problem:

$$[\lambda_1 + K_1(x + ib_1)]\,\Phi^+(x + ib_1) + F^-(x + ib_1) = \Omega(x + ib_1),$$
$$[\lambda_2 + K_2(x + ia_2)]\,\Phi^-(x + ia_2) + F^+(x + ia_2) = \Omega(x + ia_2). \qquad (9)$$

The conditions of solubility are analyzed and it is shown that, when the solution does exist, it is expressed as follows:

$$P(x) = \frac{1}{\sqrt{2\pi}} \int_{ic-\infty}^{ic+\infty} [\Phi^{+}(\zeta) - \Phi^{-}(\zeta)]\, e^{-ix\zeta}\, d\zeta\,, \quad b_1 \leqslant c \leqslant a_2. \qquad (11)$$

It is concluded that in the cases of first-kind equations, the infinitely remote point is a singular point of the problem in both the class of functions integrable with square and in the class of exponential growth functions. There is one figure.

ASSOCIATION: Belorusskiy gosudarstvennyy universitet im. V. I. Lenina (Belorussian State University imeni V. I. Lenin)

PRESENTED: By N. P. Yerugin, Academician of the AS BSSR

SUBMITTED: June 25, 1962

S/250/63/007/002/002/008
A059/A126

AUTHOR: Smagina, V. I.

TITLE: Exceptional cases of integral equations of the bundle type and the corresponding equations of the first kind in the class of functions of exponential increase. Equation of class (B)

PERIODICAL: Doklady Akademii nauk BSSR, v. 7, no. 2, 1963, 76 -79

TEXT: The "dual" integral equations (B)

$$\left.\begin{aligned} \lambda_1\varphi(x) + \frac{1}{\sqrt{2\pi}}\int_{-\infty}^{\infty} k_1(x-t)\varphi(t)dt = f(x),\ 0 < x < \infty \\ \lambda_2\varphi(x) + \frac{1}{\sqrt{2\pi}}\int_{-\infty}^{\infty} k_2(x-t)\rho(t)dt = f(x),\ -\infty < x < 0 \end{aligned}\right\} \quad (B)$$

are examined which can be written in the form

Card 1/3

Exceptional cases of integral equations of...

$$\left.\begin{aligned} \lambda_1\psi_1(x) + \frac{1}{\sqrt{2\pi}}\int_{-\infty}^{\infty} k_1(x-t)\psi_1(t)dt - f_+(x) &= -\psi_-(x) \\ \lambda_2\psi_1(x) + \frac{1}{\sqrt{2\pi}}\int_{-\infty}^{\infty} k_2(x-t)\psi_1(t)dt + f_-(x) &= \psi_+(x) \end{aligned}\right\} \quad -\infty < x < \infty \qquad (1)$$

where $\psi(x) = \psi_+(x) - \psi_-(x)$ is the new unknown function. Let $\varkappa = \mathrm{Ind}[\lambda_2 + K_2(x+ia_2)] - \mathrm{Ind}[\lambda_1 + K_1(x+ib_1)]$ and σ the number of the common zero functions $\lambda_1 + K_1(z)$, $\lambda_2 + K_2(z)$ in the region $a_2 < y < b_1$. Then, with $\varkappa > n_1 + n_2 + \sigma$ and $\sigma \geq n_2 + n_3$, the equation (B) has $\varkappa - (n_1+2n_2+n_3)$ linear independent solutions. With $\varkappa < n_1 + n_2 + \sigma$, $\sigma \geq n_2 + n_3$, the equation (B) can be solved when $n_1 + n_2 + \sigma - \varkappa$ conditions of solvability are fulfilled. If this is true, the solution will depend on $\sigma - (n_2+n_3)$ arbitrary constants. If the equations (B) of the first kind are solved in this way, the coefficient $G(\zeta)$ of the resulting boundary value-problems will show a peculiarity, namely a pole of some order in infinity.

Card 2/3

S/250/63/007/002/002/008
A059/A126

Exceptional cases of integral equations of...

ASSOCIATION: Belorusskiy gosudarstvennyy universitet im. V. I. Lenina
(Belorussian State University imeni V. I. Lenin)

PRESENTED: by N. P. Yerugin, Academician of the AS BSSR

SUBMITTED: June 25, 1962

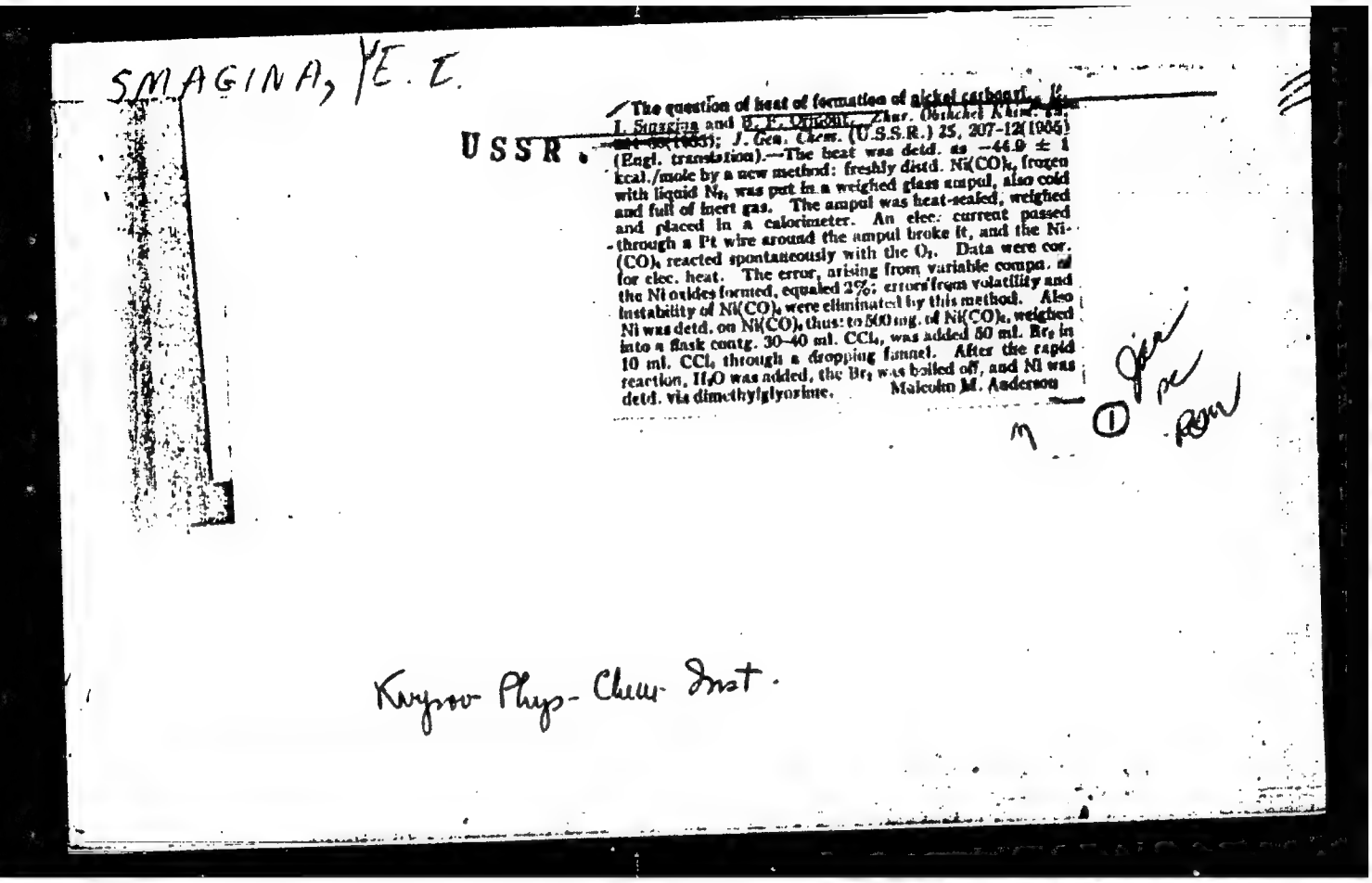
Card 3/3

GAKHOV, Fedor Dmitriyevich; ROGOZHIN, V.S., dots., red.; BACHURINA, T.A., aspirant, red.; GOVORUKHINA, A.A., aspirant, red.; ZARIPOV, R.Kh., aspirant, red.; MEL'NIK, I.M., aspirant, red.; MIKHAYLOV, L.G., aspirant, red.; LITVINCHUK, G.S., aspirant, red.; PARADOKSOVA, I.A., aspirant, red.; KHASABOV, E.G., aspirant, red.; CHERSKIY, Yu.I., aspirant, red.; YANOVSKIY, S.V., aspirant, red.; ARAMANOVICH, I.G., red.; Prinimali uchastiye: BOROVSKAYA, N.I., red.; RYSYUK, N.A., red.; SMAGINA, V.I., red.; KHAYRULLIN, I.Kh., red.; CHUMAKOV, F.V., red.; POLOVINKIN, S.M., red.; KEPPEN, I.V., red.; MIKHLIN, E.I., tekhn. red.

[Bondary value problems]Kraevye zadachi. Izd.2., perer. i dop. Moskva, Fizmatgiz, 1963. 639 p. (MIRA 16:3)
(Boundary value problems)

SMAGINA, V.I. [Smahyna, V.]

Exceptional cases of Riemann's boundary value problem for a complex contour. Vestsi AN BSSR. Ser. fiz.-tekh. nav. no.3:25-36 '63.
(MIRA 16:10)

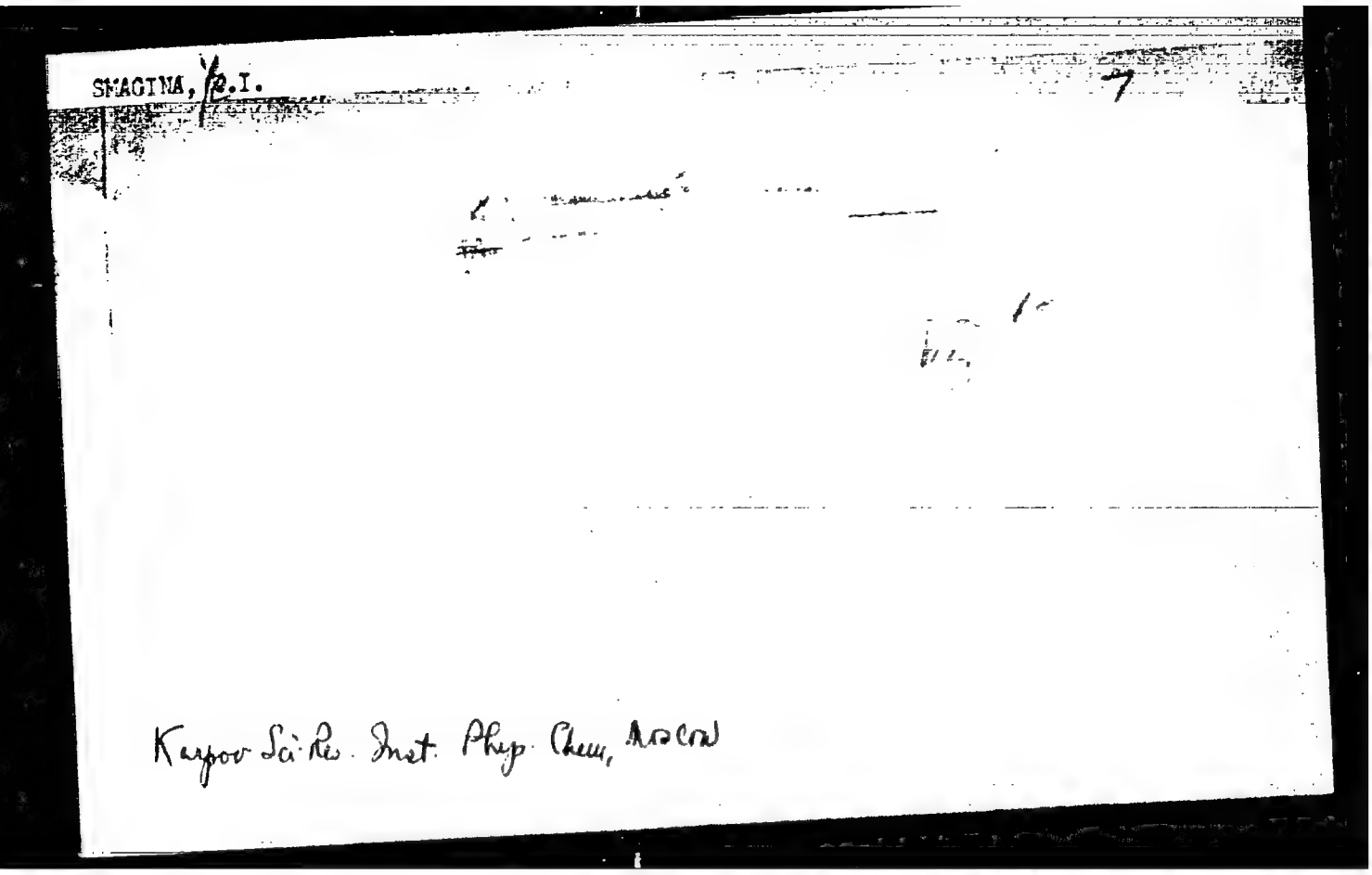


SMAGINA, YE. I.

USSR.

The question of heat of formation of nickel carbonyl. [illegible] I. Smagina and E. F. Orlenko, Zhur. Obshchei Khim. [illegible] (1935); J. Gen. Chem. (U.S.S.R.) 25, 207-12(1955) (Engl. translation).—The heat was detd. as −44.9 ± 1 kcal./mole by a new method: freshly distd. Ni(CO)$_4$, frozen with liquid N_2, was put in a weighed glass ampul, also cold and full of inert gas. The ampul was heat-sealed, weighed and placed in a calorimeter. An elec. current passed through a Pt wire around the ampul broke it, and the Ni(CO)$_4$ reacted spontaneously with the O_2. Data were cor. for elec. heat. The error, arising from variable compn. of the Ni oxides formed, equaled 2%; errors from volatility and instability of Ni(CO)$_4$ were eliminated by this method. Also Ni was detd. on Ni(CO)$_4$ thus: to 500 mg. of Ni(CO)$_4$, weighed into a flask contg. 30–40 ml. CCl_4, was added 50 ml. Br_2 in 10 ml. CCl_4 through a dropping funnel. After the rapid reaction, H_2O was added, the Br_2 was boiled off, and Ni was detd. via dimethylglyoxime. Malcolm M. Anderson

Karpov Phys-Chem. Inst.



20-2-44/62

AUTHOR [illegible]

TITLE The Heats and Free Energies of the Formation of Zirconium Nitrides as Related to Composition and Structure.
(Zavisimost' teplot i svobodnykh energiy obrazovaniya nitridov tsirkoniya ot sostava i stroyeniya -Russian)

PERIODICAL Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 2, pp 354-357 (U.S.S.R.)

ABSTRACT It is common in publications to consider zirconium nitride as a phase with constant composition and to ascribe to it formulae with various integer coefficients. According to that the data obtained from thermochemical and thermodynamic investigations of this substance were related to such a ZrN composition. In this paper the authors proved by methods of roentgen-and chemical-precision analysis that ZrN represents only a particular case. In this connection it was important to investigate the relation of the heat of formation to composition and structure of zirconium nitride. Zirconium with 1% hafnium was used as starting material. Conclusions: 1. The dependence of heats and free energies of the formation of zirconium nitrides was investigated. In contrast to published data it was found that zirconium nitride represents a phase of variable composition with a wide region of homogenity. The authors could produce preparations in an interval between $ZrN_{1,00}O_{0,04}$ and $ZrN_{0,56}O_{0,02}$. Their heats and free energies of formation correspondingly vary from 90,7 to 57,5 Ccal/mol and from -81,1 to -32,3 Ccal/mol. 2. In spite of great variations of the composition, heats and free energies of nitrides, the lattice period

Card 1/2

20-2-44/62

The Heats and Free Energies of the Formation of Zirconium Nitrides as Related to Composition and Structure.

practically remains constant.
(1 illustration, 1 table, 7 Slavic references).

ASSOCIATION Fizikc-khimicheskiy institut im. L.Ya. Karpova
PRESENTED BY MARGIN V.A., ..emne. of the Academy, April 25, 1957
SUBMITTED
AVAILABLE Library of Congress.
Card 2/2

79-1-62/63

Letter to the Editor. On the Problem of the Formation Entalpy of Nickel Carbonyl.

data of the formation entalpy of the gaseous one. The American authors admitted two great errors in citing our data by not noticing that our calculation is only valid for liquid and theirs for gaseous carbinol (?). Moreover they omitted to notice the fact that a somewhat different quantity of the formation entalpy of NiO was used in our calculation. On the basis of these incomprehensible errors they do not cite our results but theirs, i.e. incorrect results, and thus maintain that our data of investigation possibly do not correspond to facts. - In one of our next papers we intend to deal with other incorrect statements made by American authors". There are 10 references, 3 of which are Slavic.

ASSOCIATION: Institute imeni L. Ya. Karpov
(Institut imeni L. Ya. Karpova)

SUBMITTED: July 12, 1957

AVAILABLE: Library of Congress

Card 2/2 1. Chemistry 2. Nickel

SMAGINA, Ye.I.; KUTSEV, V.S.; ORMONT, B.F.

Study of the equilibrium in the system zirconium - nitrogen at high temperatures, and the free energy of formation of ZrN_x as a function of the composition and structure of this system. Probl.fiz.khim. no.2:118-131 '59. (MIRA 13:7)

1. Laboratoriya kompleksnykh i tverdykh soyedineniy Nauchno-issledovatel'skogo fiziko-khimicheskogo instituta imeni L.Ya.Karpova.

(Zirconium nitride) (Nitrogen)

SHAGI[illegible]A, Ye. I., Cand Chem Sci -- (diss) "Thermodynamic research into the zirconium-nitrogen system at high temperatures." Moscow, 1960. 10 pp; (Ministry of Higher Education USSR, Moscow State Univ im M. V. Lomonosov, Chemistry Faculty); 150 copies; price not given; (KL, 27-60, 149)

84635

S/076/60/034/010/017/022
B015/B064

18.7530
18.1200 2708, 2808, 2308

AUTHORS: Smagina, Ye. I., Kutsev, V. S., Ormont, B. F.

TITLE: Investigation of Equilibrium in the System Zr - N at High Temperatures

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 10, pp. 2328-2335

TEXT: Investigations of the reaction between zirconium and nitrogen at high temperatures are important since zirconium has recently much been used as a construction material. In recent papers, e.g., by Hoch et al. (J.Amer.Chem.Soc., 77, 304, 1955) the metal nitrides are wrongly regarded as phases of constant composition. In the present case, the nitride equilibrium of zirconium nitrides was investigated at temperatures of up to 2800°K. A vacuum furnace described in Ref. 8 was somewhat modified and the experiments carried out in it; special attention was paid to chemical and X-ray analyses to check the changes in the nitride phase. The temperature in the vacuum furnace was measured with an optical ОППИР-45 (OPPIR-45) pyrometer, calibrated for an ЛТ-2 (LT-2) standard lamp

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Investigation of Equilibrium in the System Zr - N at High Temperatures

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irrespective of the fact whether nitrides rich or poor in nitrogen are taken as a basis, if the same temperature and pressure were maintained. This may be regarded as a proof that true equilibrium has been attained for the given pressure and temperature. The data of the X-ray phase-shift analysis show that all preparations were single-phase nitrides ZrN_x with cubic face-centered lattices, and that with a change of x between 0.7 and 0.96 the lattice period is between 4.577 and 4.584 A. Contrary to Ref. 1, it was found that in equilibrium the phases ZrN_x - N_2 coexist, and not ZrN, Zr_{solid} and N_2. A table gives the equilibrium compositions as a function of temperature and pressure. There are 6 figures, 3 tables, and 13 references: 4 Soviet, 5 US, and 4 German.
Legend for the Table: Dependence of equilibrium compositions of zirconium nitrides on temperature and pressure, 1 = formula of initial product, 2 = T, K^o of furnace (true), 3 = equilibrium pressure, mm Hg, 4 = formula of final product according to chemical analysis, 5 = lattice period, A, 6 = nitride with low nitrogen content, 7 = dto.

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Таблица 1

Table 1

Зависимость равновесных составов нитридов циркония от температуры и давления

1 Формула исходного продукта	2 T, °K печи (истинная)	3 Равновесное давл., мм рт. ст.	4 Формула конечного продукта по хим. анализу	5 Период решетки, Å
Нитрид с низким содержанием азота	2133	13,0	$ZrN_{0,924 \pm 0,02}$	4,577
$ZrN_{0,937}$	2148	$1,5 \cdot 10^{-1}$	$ZrN_{0,783 \pm 0,08}$	4,578
$ZrN_{0,935 \pm 0,01}$	2235	6,0	$ZrN_{0,941}$	4,577
$ZrN_{0,935 \pm 0,01}$	2235	6,0	$ZrN_{0,918}$	4,578
$ZrN_{0,658}$	2235	17,0	$ZrN_{0,89}$	4,577
$ZrN_{0,804}$	2235	20,0	$ZrN_{0,920}$	4,578
$ZrN_{0,967}$	2235	105,0	$ZrN_{0,905}$	4,577
Нитрид с низким содержанием азота	2235	350,0	$ZrN_{0,952}$	4,578
$ZrN_{0,956}$	2320	11,5	$ZrN_{0,941}$	4,577
$ZrN_{0,781}$	2350	3,0	$ZrN_{0,87}$	4,577
$ZrN_{0,935 \pm 0,01}$	2350	27,5	$ZrN_{0,905}$	4,578
Нитрид с низким содержанием азота	2353	195,0	$ZrN_{0,938}$	4,576

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$Zr_1N_{0,783}$	2448	$2,3 \cdot 10^{-1}$	$Zr_1N_{0,783}O_{0,1}$	4,582
$Zr_1N_{0,956}$	2455	6,0	$Zr_1N_{0,863}$	4,577
Нитрид с низким содержанием азота	2505	12,0	$Zr_1N_{0,865}O_{0,06}$	4,577
Нитрид с низким содержанием азота	2505	12,0	$Zr_1N_{0,862}$	4,577
$Zr_1N_{0,88800,01}$	2545	13,0	$Zr_1N_{0,931}$	4,575
$Zr_1N_{0,93500,01}$	2700	7,5	$Zr_1N_{0,891}$	4,577
$Zr_1N_{0,93500,01}$	2750	10^{-1}	$Zr_1N_{0,70}O_{0,02}$	4,564
Нитрид с низким содержанием азота	2300	10^{-1}	$Zr_1N_{0,79}O_{0,1}$	
То же	2600	10^{-1}	$Zr_1N_{0,78}O_{0,06}$	

Card 5/5

Fel'V, G.D.; [illegible], A.C., KUTSEV, V.S.

[illegible] Zav.lab. 28 no.5 511 62.
(MIRA 15:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut zheleznodorozhnogo transporta (for Fel'V, Korenishina). 2. Institut fizicheskoy khimii AN SSSR (for Markov). 3. Zavod "Dneprospetsstal'" (for Bogdanovich, Terletskiy). 4. Karagandinskiy metallurgicheskiy zavod (for Kagasov). 5. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut nelkometallicheskoy promyshlennosti (for Smagina, Kutsev).

(Continued on next card)

1.5000

S/032/62/028/004/025/026
B116/B104

AUTHORS: Smagina, Ye. I., and Kutsev, V. S.

TITLE: Device for tests at high temperatures and pressures

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 4, 1962, 511

TEXT: A device (Fig.) combining a vacuum furnace for 2000-2800°C with a calorimetric bomb is described. The material 8 to be tested is placed in an ampul or in the form of a rod onto tungsten support 9. The upper part of the tube is contacted with the electrode over the molybdenum sleeve 10. The end of the tungsten or molybdenum heater 11 is pressed to sleeve 10 by clamp 12. The lower part of the tube is pressed to 10 by 12 in a similar manner. The ends of these sleeves 10 are milled, and contacted with the molybdenum bars 14 which are connected with the arc 5. The heater 11 is screened from the molybdenum-sheet tube 13, and fixed by a wire to arc 5. When reactions with carbon are investigated, a graphite heater is screwed onto the outside thread of the electrode. The furnace is filled with gas from a balloon. For cooling, the furnace is lowered into a thermostat with water cooling. At 2000°C, 7 kw is consumed for

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graphite heaters, and 4 kw for tungsten or molybdenum heaters. Working is performed at 1-50 atm excess pressure. There is 1 figure.

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti (State Design and Planning Scientific Research Institute of the Rare Metals Industry)

Fig. Diagram of the device. (1) Casing, (2) cover, (3) cap screw, (4) electrode, (5) arc, (6) quartz glass, (7) nut, (8) material to be tested, (9) support, (10) molybdenum cups, (11) Mo or W heater, (12) Mo clamps, (13) screen, (14) Mo bars, (15) rubber packing, (16) mounting of feeder bars, (17) sleeve, (18) screw coupling, (19) water.

KUZ'SEV, V.S.; SMAGINA, Ye.I.; MORZHEYEDOVA, R.N.

Sm_2O_3 form B. Zhur.neorg.khim. 8 no.5:1048-1052 My '63.
(MIRA 16:5)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut rëdkometallicheskoy promyshlennosti "Giredmet".
(Samarium oxide)

L 17105-63 EWA(k)/EWT(1)/BDS AFFTC/ASD WW

ACCESSION NR: AP3004239 S/0032/63/029/007/0826/0826

56
54

AUTHORS: Kutsev, V. S.; Smagina, Ye. I.; Morzheyedova, R. N.

TITLE: A method for making X-ray pictures of air-labile substances

SOURCE: Zavodskaya laboratoriya, v. 29, no. 7, 1963, 826

TOPIC TAGS: air-labile substance, grinding in argon, neodymium carbide

ABSTRACT: A device (see enclosure) was constructed to permit the grinding of small quantities of air-labile substances in an atmosphere of argon, followed by sifting and packing into a cellophane capillary container (intended for x-ray analysis). It consisted of a glass cylinder 18mm in diameter with two intersecting tubes; one (protected by a wire screen) is drawn into a capillary to which is attached a cellophane capillary 0.4 mm in diameter. Into the lower end of the glass cylinder a small steel cylinder which serves as a mortar is tightly inserted. A similar longer steel cylinder is inserted into the upper end of the glass cylinder in such a way as to permit grinding movements. The space between the two steel cylinders thus represents a small chamber where the

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L 17105-63

ACCESSION NR: AP3004239 2

sample can be ground while argon is being passed through. After the grinding is completed, the commimuted sample is sifted through the wire screen into the capillary cellophane tube, the latter sealed with nitrocellulose glue, then subjected to X-ray analysis. In this way the parameters of neodymium carbide were determined. Orig. art. has: 1 picture.

ASSOCIATION: Gosudarstvenny*y nauchno-issledovatel'skiy i proyektny*y institut redkometallicheskoy promy*shlennosti (State Scientific Research and Project Institute of Rare-Metals Industry)

SUBMITTED: 00	DATE ACQ: 02Aug63	ENCL: 01
SUB CODE: SD	NO REF SOV: 000	OTHER: 002

Card 2/3

SMAGINA, Ye.I. (Moskva); KUTSEV, V.S. (Moskva)

Density and degree of disorder in some solid phases of varying composition. Zhur.fiz.khim. 37 no.8:1813-1817 Ag '63. (MIRA 16:9)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti.
(Zirconium nitrides) (Crystallography)

SHAGLIN, Georgiy Savel'yevich; SHCHENKOV, V.V., inzh., retsenzent; KRYZHKO, I.S., inzh., retsenzent; CHERNOBROV, S.M., red.

[Electrolytic production of magnesium] Elektroliticheskoe proizvodstvo magniia. Moskva, Metallurgiia, 1965. 150 p. (MIRA 18:7)

L 43[illegible]-66 EWT(d)/EWT(l)/[illegible](l) IJP(c) EJ/GG/BB

ACC NR: AT6023934 SOURCE CODE: UR/3220/66/000/001/0087/0102

AUTHOR: Kobzar', M. T.; Smagliy, A. M.

ORG: none

TITLE: Maintenance and design improvements in the M-20 computer

SOURCE: Tsifrovaya vychislitel'naya tekhnika i programmirovaniye, no. 1, Moscow, 1966, 87-102

TOPIC TAGS: digital computer, computer reliability

ABSTRACT: An extended reliability study has been made on the M-20 computer, a medium capacity general purpose digital computer which has core memory, external tape and drum storage, and uses tubes and diodes as active elements. Maintenance and repair records were kept for five years on two M-20's; the main findings from these data are reviewed. Based on the failure history of various components, a preventive maintenance schedule was developed as follows: 1) daily checks requiring 2—3 hours, of test routines at under- and over-voltage, including separate checks of reader, output printer, and output perforator; 2) weekly checks, 6—8 hours, of memory read and write operations and logic circuit tests; 3) quarterly checks, requiring 5 days, including disassembly and overhaul of power supplies and signal circuits, plus

Card 1/3 UDC: 681.142.004

Table 1.

Year	No. tubes tested	Category I		II		III		IV	
		No.	%	No.	%	No.	%	No.	%
1964	1781	481	26,9	305	17,1	331	18,6	667	37,4
1965	1762	278	15,8	577	33,3	293	16,6	614	34,3

operation at subnormal filament voltage; 4) yearly checks, 10—15 days long; for power supply and cooling systems overhaul; overhaul of input/output hardware and external memories; cleaning and adjustment of all subassemblies; testing all tubes and replacement as needed. Decreased output and self-oscillation caused most tube failures; attempts were made throughout the program to eliminate these faults by design change and tube substitution. Table 1 lists tube deterioration for two years, divided into four categories according to severity; Table 2 lists the annual tube and diode replacement totals for 1961 through 1964. Reducing filament voltage by 5% was an effective way to detect incipient tube failures; over-frequency tests similarly showed potential weaknesses in timing circuits. To test the core memory, test routines were

ACC NR: AT6024734

Type of disk memory	Capacity, bytes	No. of replacements			
		1962	1963	1964	1965
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	3072	5000	4620	4200	3300
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9332	100	650	300	200	150
9332P	118	260	310	350	400
9312P	68	270	85	50	30
9309	454	2600	2620	1230	900
9213S	1170	1770	1730	1850	1650
9214P	64	300	200	180	100
GU-50	256	1414	1424	815	725
6710P	256	251	125	481	150
70-301/43	100	130	200	175	100
D2V	42000	3200	3000	2000	1600
D2Ve	18000	9500	8580	2000	1000
D13	17000	6000	5300	2000	500
D7G, D72h	3000	4700	3075	1050	300

run repeatedly and the results compared. The external memories were relatively trouble-free, as long as strict mechanical maintenance of head alignment and drive mechanisms was performed. The reliability of drum operation was in part attributed to thermostatic control of the heads to ±0.5C; after two years of experimenting it was found possible to double the drum write density to 6 p/mm and reduce the air gap to 1.5—20 μ, without degrading its performance. Statistical analyses from which the maintenance routines were derived are briefly described. As a result of the design improvements and rigorous maintenance schedules, an average daily operating time of 19 hr 35 min, or 7145 hr/year, was achieved. Orig. art. has: 10 figures and 5 tables. [SH]

SUB CODE: 09/ SUBM DATE: none/ ORIG REF: 004/ ATD PRESS: 5045

Card 3/3 js

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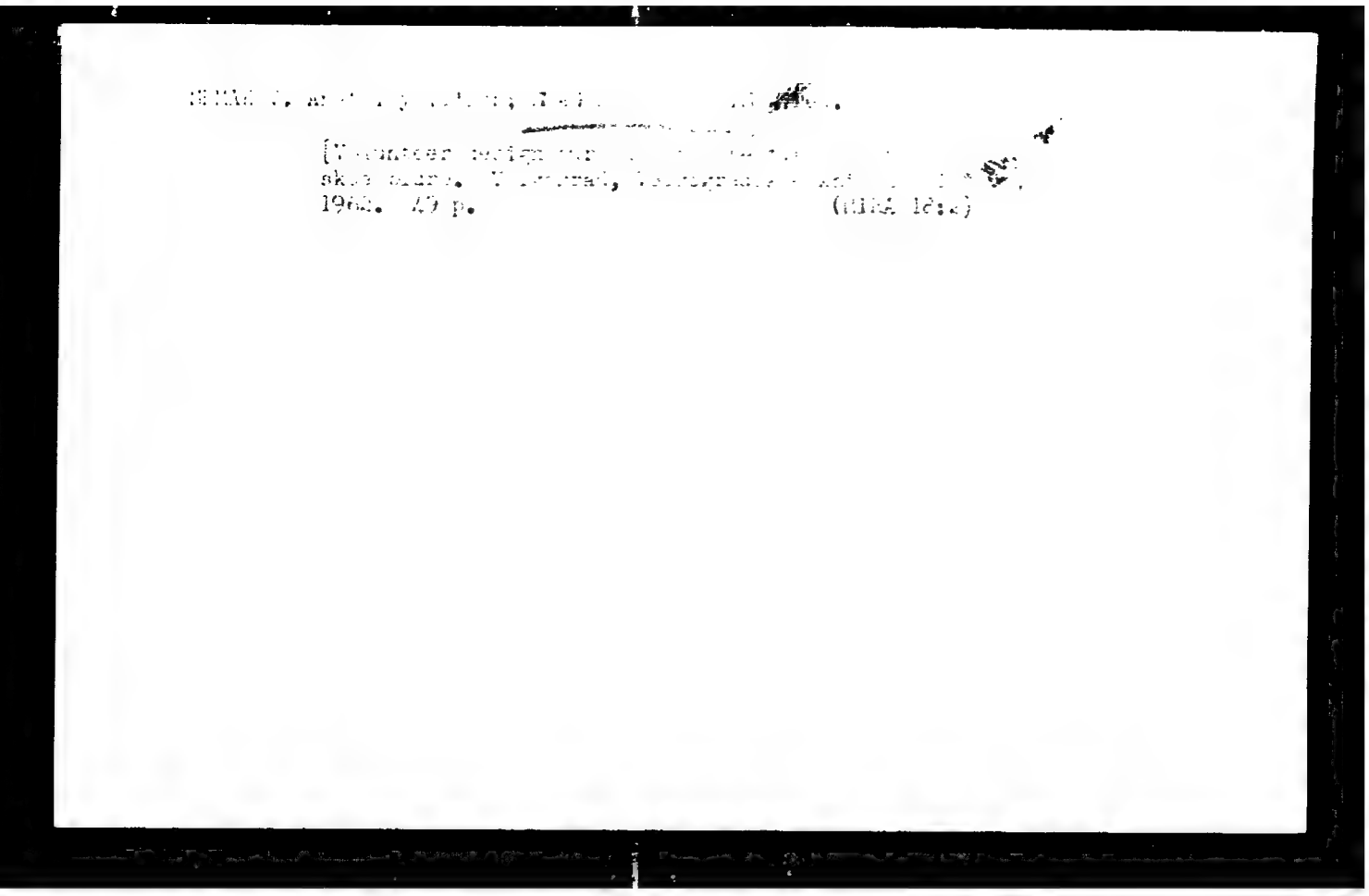

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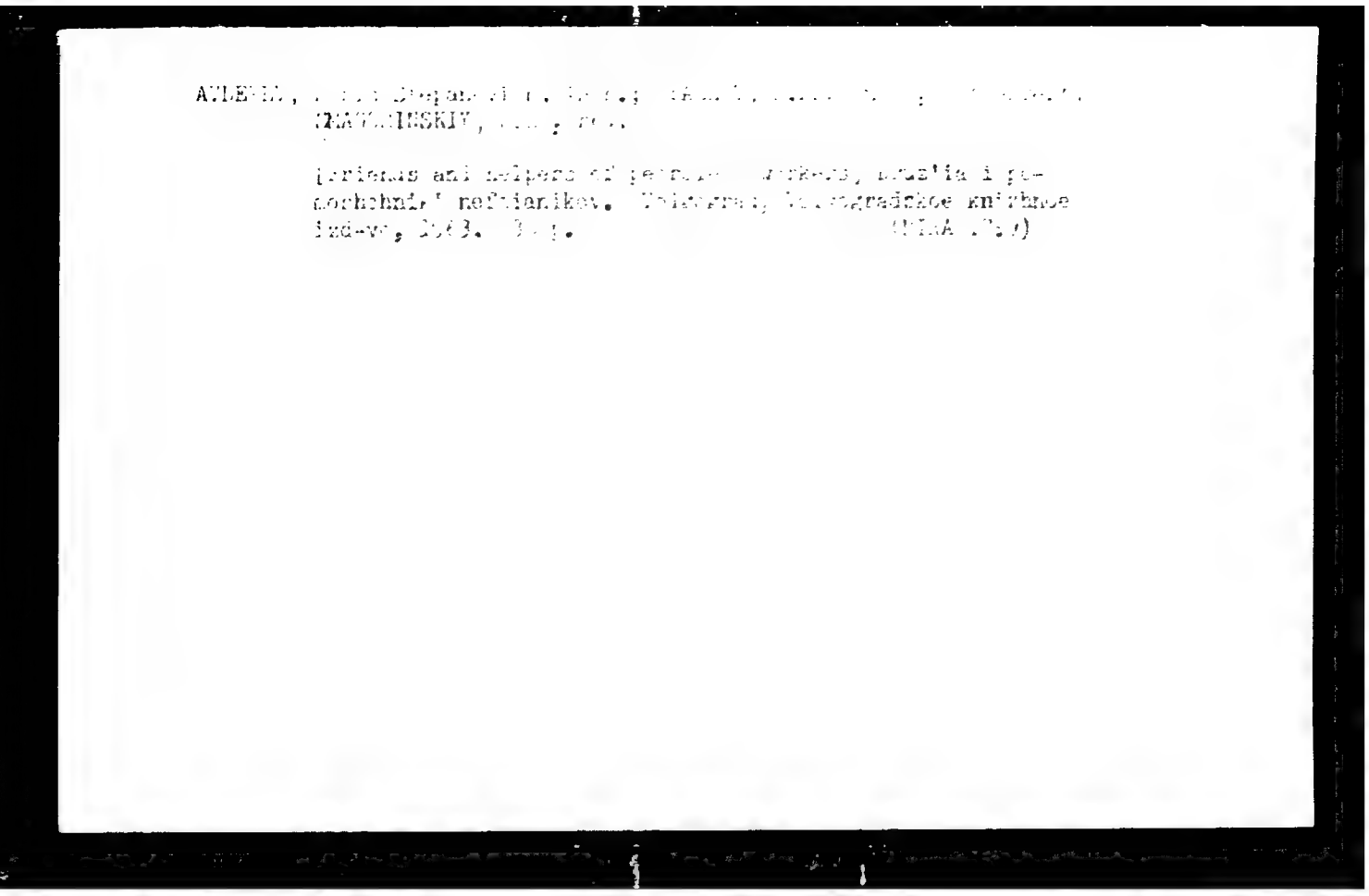

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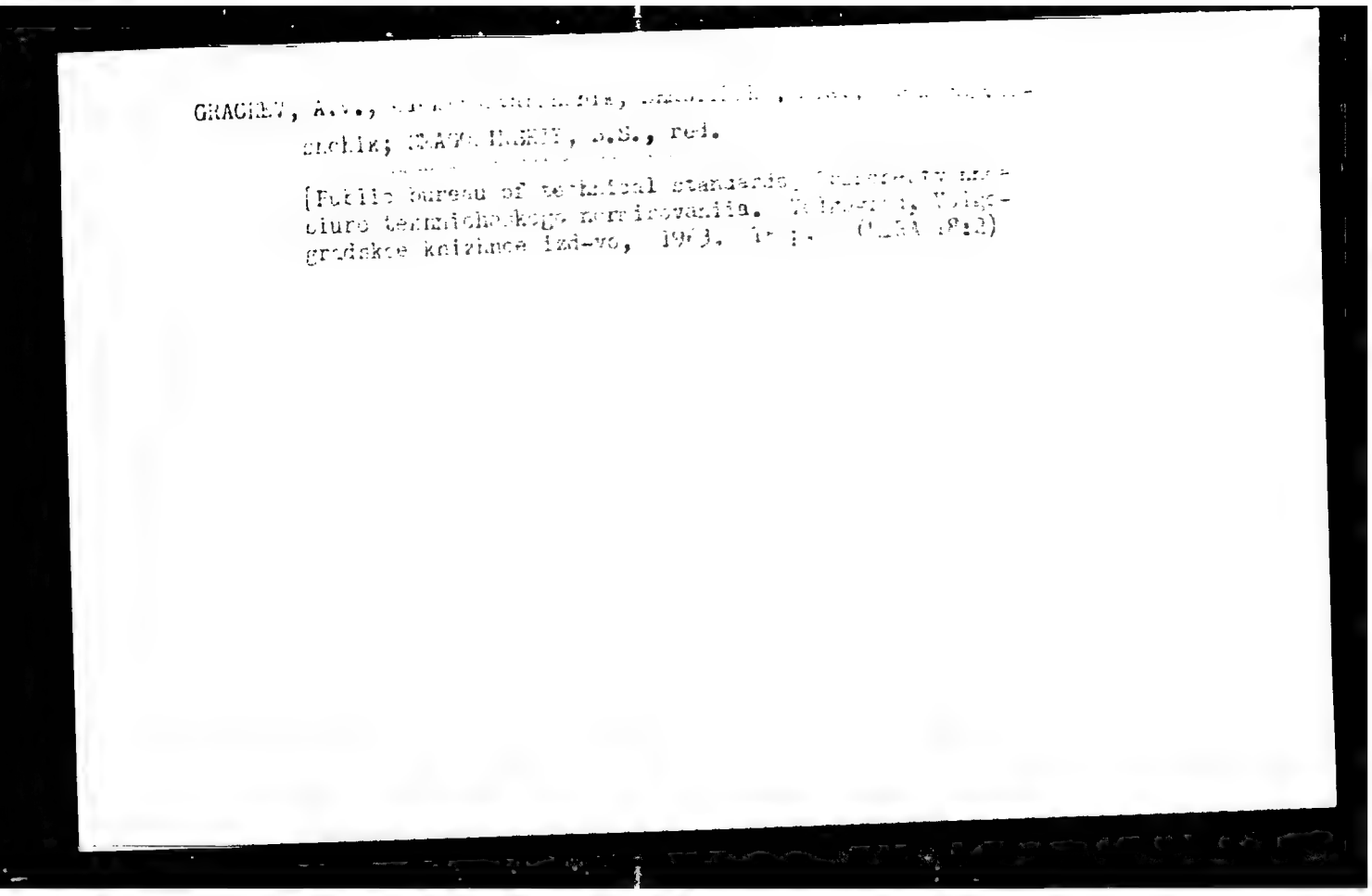

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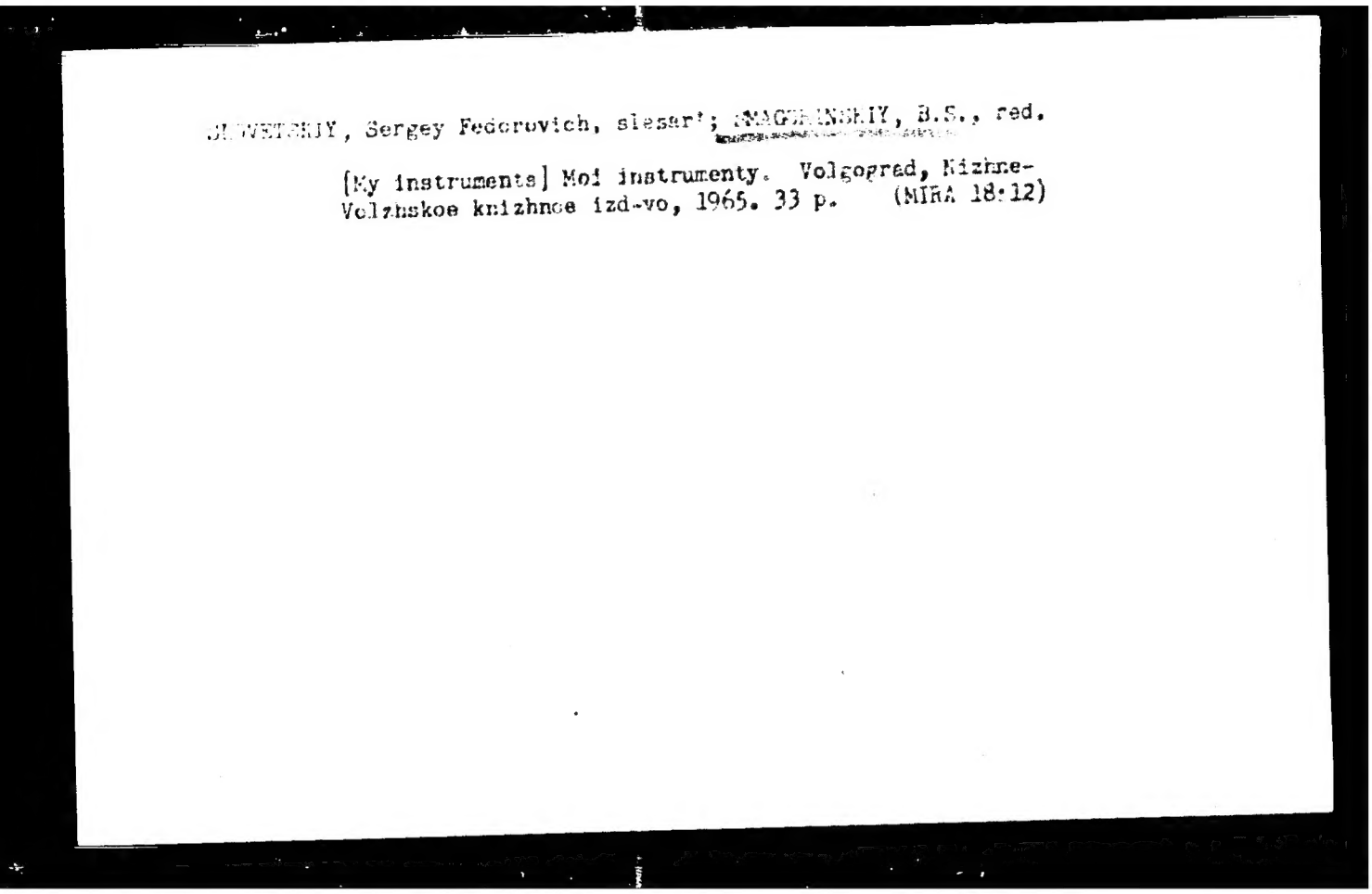

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